Kleinrock

Misc. Network Note #9

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NETWORK MEASUREMENT PROGRAM (NMP)

The measurement program is a FORTRAN program which formats and prints out the measurement statistics generated by the IMPs. It uses a number of assembly language subroutines which interface with the RAD75 monitor and enable the NMP to control the interrupts, the clock and the IMP interface. In addition the program can generate aritificial traffic over the network.

The program is controlled by commands typed in at the operator's console. To do this you press the interrupt button and when the input light is on, enter the command. Except for INIT, RSTR, RUN & ZRUN, the program keeps on asking for a new command. The commands are three or four letter mnemonics, some of which require additional parameters. All TTY inputs are ended by typing the new line character. Those commands requiring parameters, require them one parameter at a time, on separate lines, each line being ended by the new line character (NL).

In the command descriptions which follow, parameter field width will be indicated by a series of letters, for example, a three digit parameter field would be described as "DDD." When a parameter is called for, any number of digits, up to the maximum field width, may be typed. The program aborts if letters (A - Z) are typed when only digits (0-9) are expected.

The following commands are recognized:

ACUM

format: ACUM (NL)

DDD (NL)

interp: Causes the program to print every nth accumulated statistics message received where n is the value entered as a parameter.

CNOT

format: CNOT (NL)

interp: Causes all statistics about round-trip message delays measured during message generation, to be published on operator's console.

DATE

format: DATE (NL)

interp: The six numerics (MMDDYY) are used to set the date published on all print-outs.

DLAY

format: DLAY (NL)

DDDDDD (NL)

interp: The inter-experimental delay time is set to the time in seconds entered as a parameter. This allows message generation activity to die down (all RFNMS to be received) before the start of the next experiment.

EXIT

format EXIT (NL)

interp: causes the program to terminate and control to return to the RAD-75 monitor.

IMP

format: IMP (NL)

interp: The program assumes input of messages from IMP rather than tape.

INIT

format: INIT (NL)

interp: Re-initializes the program and IMP interface. Causes generation of a NOP for IMP. Includes the RSTR function. You lose control after this command is executed.

MGSP

format: MGSP (NL)

DD (NL)

interp: The specified message generator (1-63) is turned off and any statistics accumulated for that generator are published (at console if CNOT, or printer if PROT).

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MSGG

The user specifies the generator numbers, the destination, initial message length, final message length, length increments for successive runs, the duration of the run in milliseconds and the number of messages sent on each link. If a length increment greater than zero has been specified the experiment will stop after the end message length has been run otherwise the experiment will repeat until stopped from the operators console.

format:	MSGG (NL)	
(low generator)	LL (NL)	$0 \leq LL \leq 63$
(high generator)	HH (NL)	$LL \leq HH \leq 63$
(period in milli-seconds)	PPPPPP (NL)	$PPPPPP < 0$
(begin msg length)	BBB (NL)	$1 \leq BBB \leq 250$
(end msg length)	EEE (NL)	$BBB \leq EEE \leq 250$
(increment)	III (NL)	$0 \leq III \leq 250$
(leader)	RRRRRRRR (NL)	Hexadecimal digits!

interpretation: Message generators LL through HH are activated. Every PPPPPP milli-seconds, each generator will send a message BBB words (including leader) in length into the network. One word is 32 bits long.

NDEC

format: NDEC (NL)

interp: Inhibits the decimal printout of input messages.

NMSG

format: NMSG (NL)

interp: Inhibits the leader printout of messages not processed.

NRFM

format: NRFM (NL)

interp: Inhibits RFNM printout.

NSAV

format: NSAV (NL)

interp: Inhibits saving of input on the tape on logical unit 83 (currently assigned to physical unit 83).

PDEC

format: PDEC (NL)

interp: causes the program to print each measurement message in decimal before formatting it.

PMSG

format: PMSG (NL)

interp: causes the program to print the leaders of messages it does not process. (two sixteen bit decimal numbers)

PRFM

format: PRFM (NL)

interp: causes the program to print all RFNMs as two decimal numbers of sixteen bits each.

PROT

format: PROT (NL)

interp: causes all statistics about round-trip message delays measured during message generation, to be published on the line printer.

PSTP

format: PSTP (NL)

interp: causes the program to stop all generators and publish counts. Normally executed automatically at the end of each run in an experiment.

RSTR

format: RSTR (NL)

interp: Re-initializes the IMP interface. Causes generation of a NOP for the IMP. Does not reset program initial parameters. Resets input buffer pointer to one. You lose control after this command is executed.

RUN

format: RUN (NL)

interp: Gives control back to the program with parameters as set.

RWND

format: RWND (NL)

interp: Causes the program to rewind the tape on logical unit 83 (currently assigned to physical unit 83).

SAVE

format: SAVE (NL)

interp: Causes the program to write all IMP messages on the tape on logical unit 83 (currently assigned to physical unit 83).

SCLK

format: SCLK (NL)
DDDDD (NL)

interp: The experimental run time is set to time in seconds entered as a parameter.

SNAP

format: SNAP (NL)
DDD (NL)

interp: Causes the program to print every nth snapshot message received, where n is the value entered as a parameter.

STOP

format: STOP (NL)

interp: Turns off the IMP interface. Normally used when input is from tape. To restart input from IMP use RSTR.

TAPE

format: TAPE (NL)

interp: Causes the program to take its input from the tape on logical unit 83 (currently assigned to physical unit 83).

TRAC

format: TRAC (NL)
DDD (NL)

interp: Causes the program to print every nth trace message received, where n is the value entered as a parameter.

WEOF

format: WEOF (NL)

interp: Causes the program to write an end of file record on the tape on logical unit 83 (currently assigned to physical unit 83.)

ZRUN

format: ZRUN (NL)

interp: Initiates the message generators and zeros the message counts. INcludes the RUN function. You lose control after this command is executed.

The initial conditions are IMP, NSAV, NRFM, NDEC, NMSG, CNOT, DLAY=5 seconds, SCLK=60 seconds, ACUM=1, SNAP=20, TRAC=1. DATE is initially set by a data card read from the card reader.

For further information contact:

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